National Higher School of Cyber security

Level:1st year common core **Module:** Computer Architecture

Academic Year: 2024-2025

Tutorial Sheet No. 2

Exercise 1

Draw the correct symbol and truth table for each of the following logic gates

a) NOT gate

b) AND gate

c) OR gate

d) NAND gate

e) NOR gate

Exercise 2

Draw the NAND gate equivalents for each of the following logic gates

a) NOT

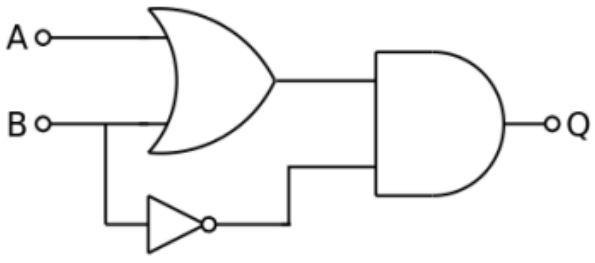
b) AND

c) OR

d) NOR

Exercise 3

Write down the Boolean expression for the following logic circuit



Exercise 4

Write down the Boolean expression for the following truth table

A	B	C	Q
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	0

Exercice 5

Algebraically simplify the following functions:

F1 = a.b + $\bar{c}$ + c.($\bar{a}$ + $\bar{b}$)

F2 = (x.$\bar{y}$ + z).(x + $\bar{y}$).z

F3 = (x + y).z+ $\bar{x}$.($\bar{y}$ + z) + $\bar{y}$

F4 = (a + b + c).($\bar{a}$ + b + c) + a.b + b.c